

**WHAT IS CLAIMED IS:**

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1. ~~An active oxygen barrier composition, comprising:  
a oxygen barrier polymer, an oxygen scavenging polymer, and an oxidation  
catalyst.~~

2. The composition of claim 1, wherein the composition has an oxygen transmission rate at least 5 times lower than that of the oxygen barrier polymer alone.

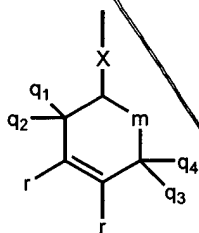
3. The composition of claim 1, wherein the oxygen barrier polymer is selected from polymers or copolymers of vinyl alcohol, polyesters, polymers or copolymers of vinylidene dichloride, polymers or copolymers of epoxies, polysulfones, polymers or copolymers of acrylonitrile, polymers or copolymers of isocyanates, or polyamides other than MXD6.

4. The composition of claim 3, wherein the polyamides other than MXD6 are nylon 6; nylon 6,6; nylon 6,12; and amorphous polyamide.

5. ~~The composition of claim 1, wherein the oxygen scavenging polymer comprises an ethylenic backbone and at least one cyclic olefinic pendant group.~~

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A3

6. The composition of claim 5, wherein the cyclic olefinic pendant group is a cycloalkenyl group having structure I:



wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are independently selected from hydrogen, methyl, or ethyl;  $m$  is  $-(CH_2)_n-$ , wherein  $n$  is an integer from 0 to 4, inclusive;  $X$  is null or a linking group; and, when  $r$  is hydrogen, at least one of  $q_1$ ,  $q_2$ ,  $q_3$ , and  $q_4$  is also hydrogen.

7. The composition of claim 6, wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ ,  $r$ , are each hydrogen and  $n$  is 1.

8. The composition of claim 7, wherein the oxygen scavenging compound is ethylene/vinyl cyclohexene copolymer (EVCH).

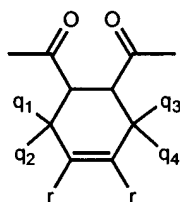
9. The composition of claim 6, wherein  $X$  is selected from:

$-O-(CHR)_n-$ ;  $-(C=O)-O-(CHR)_n-$ ;  $-NH-(CHR)_n-$ ;  $-O-(C=O)-(CHR)_n-$ ;  
 $-(C=O)-NH-(CHR)_n-$ ; or  $-(C=O)-O-CHOH-CH_2-O-$ .

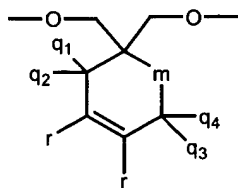
10. The composition of claim 9, wherein the oxygen scavenging polymer is a homopolymer or a copolymer of cyclohexenylmethyl acrylate.

11. The composition of claim 10, wherein the oxygen scavenging polymer is ethylene/methyl acrylate/cyclohexenylmethyl acrylate terpolymer (EMCM), ethylene/cyclohexenylmethyl acrylate copolymer (ECHA), or cyclohexenylmethyl acrylate homopolymer (CHAA).

12. The composition of claim 1, wherein the oxygen scavenging polymer is a polyester comprising structure II or structure III:



(II)



(III)

wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are independently selected from hydrogen, methyl, or ethyl;  $m$  is  $-(CH_2)_n-$ , wherein  $n$  is an integer from 0 to 4, inclusive; and, when  $r$  is hydrogen, at least one of  $q_1$ ,  $q_2$ ,  $q_3$ , and  $q_4$  is also hydrogen.

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13. The composition of claim 12, wherein in structure II  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are hydrogen.

14. The composition of claim 12, wherein in structure III  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are hydrogen and  $n$  is 1.

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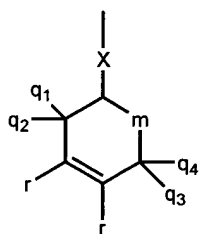
15. The composition of claim 1, further comprising a compatibilizer.

16. The composition of claim 15, wherein the compatibilizer is selected from anhydride-modified or acid-modified poly(ethylene acrylate), poly(ethylene vinyl acetate), or polyethylene.

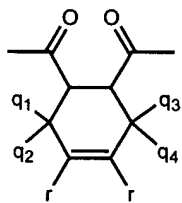
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17. The composition of claim 7, wherein the compatibilizer comprises a block copolymer of (i) EVOH, PVDC, PET, PEN, or polyamide other than MXD6 and (ii) a polyolefin comprising a cycloalkenyl pendant group having structure I, or a polyester group having structure II or structure III:

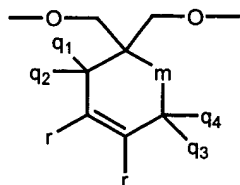
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(I)



(II)



(III)

5 wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are independently selected from hydrogen, methyl, or ethyl;  $m$  is  $-(CH_2)_n-$ , wherein  $n$  is an integer from 0 to 4, inclusive;  $X$  is null or a linking group; and, when  $r$  is hydrogen, at least one of  $q_1$ ,  $q_2$ ,  $q_3$ , and  $q_4$  is also hydrogen.

10 18. The composition of claim 17, wherein the compatibilizer comprises a block copolymer of EVOH, PET, PVDC, PEN, or polyamide other than MXD6 with EMCM, ECHA, EVCH, or CHAA.

19. The composition of claim 1, wherein the oxygen scavenging polymer is present as an insoluble filler.

15 20. The composition of claim 1, wherein the oxidation catalyst comprises a transition metal selected from cobalt, copper, nickel, iron, manganese, rhodium, or ruthenium.

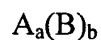
21. The composition of claim 20, wherein the oxidation catalyst is a salt comprising a counterion selected from  $C_1$ - $C_{20}$  alkanoates.

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22. The composition of claim 21, wherein the oxidation catalyst is cobalt oleate, cobalt stearate, or cobalt neodecanoate.

23. The composition of claim 1, further comprising a photoinitiator.

24. The composition of claim 23, wherein the photoinitiator is selected from benzophenone derivatives containing at least two benzophenone moieties and having the formula:



wherein

A is a bridging group selected from sulfur; oxygen; carbonyl;  $-\text{SiR}''_2-$ , wherein each  $\text{R}''$  is individually selected from alkyl groups containing from 1 to 12 carbon atoms, aryl groups containing 6 to 12 carbon atoms, or alkoxy groups containing from 1 to 12 carbon atoms;  $-\text{NR}'''-$ , wherein  $\text{R}'''$  is an alkyl group containing 1 to 12 carbon atoms, an aryl group containing 6 to 12 carbon atoms, or hydrogen; or an organic group containing from 1 to 50 carbon atoms;

a is an integer from 0 to 11;

B is a substituted or unsubstituted benzophenone group; and

b is an integer from 2 to 12.

25. The composition of claim 24, wherein the photoinitiator is selected from dibenzoyl biphenyl, substituted dibenzoyl biphenyl, benzoylated terphenyl, substituted benzoylated terphenyl, tribenzoyl triphenylbenzene, substituted tribenzoyl triphenylbenzene, benzoylated styrene oligomer, or substituted benzoylated styrene oligomer.

26. The composition of claim 1, further comprising an antioxidant.

27. The composition of claim 26, wherein the antioxidant is selected from 2,6-di(t-butyl)-4-methylphenol(BHT), 2,2'-methylene-bis(6-t-butyl-p-cresol), triphenylphosphite,

tris-(nonylphenyl)phosphite, vitamin E, tetra-bismethylene 3-(3,5-ditertbutyl-4-hydroxyphenyl)-propionate methane, or dilaurylthiodipropionate.

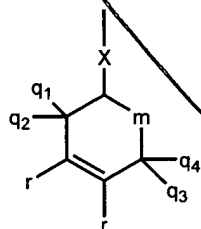
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28. A packaging article, comprising:  
at least one active oxygen barrier layer comprising an oxygen barrier polymer and  
an oxygen scavenging polymer. = 20

10 29. The packaging article of claim 28, wherein the oxygen barrier polymer is selected  
from polymers or copolymers of vinyl alcohol, polyesters, polymers or copolymers of  
vinylidene dichloride, polymers or copolymers of epoxies, polysulfones, polymers or  
copolymers of acrylonitrile, polymers or copolymers of isocyanates, or polyamides other  
than MXD6. = 20

15 30. The packaging article of claim 29, wherein the polyamides other than MXD6 are  
nylon 6; nylon 6,12; nylon 6,6; and amorphous polyamide.

31. The packaging article of claim 28, wherein the oxygen scavenging polymer  
comprises an ethylenic backbone and a cyclic olefinic pendant group.

20 32. The packaging article of claim 31, wherein the cyclic olefinic pendant group is a  
cycloalkenyl group having structure I:



(I)

25 wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are independently selected from hydrogen, methyl, or  
ethyl;  $m$  is  $-(CH_2)_n-$ , wherein  $n$  is an integer from 0 to 4, inclusive;  $X$  is null or a linking  
group; and, when  $r$  is hydrogen, at least one of  $q_1$ ,  $q_2$ ,  $q_3$ , and  $q_4$  is also hydrogen.

33. The packaging article of claim 32, wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ ,  $r$ , are each hydrogen and  $n$  is 1.

34. The packaging article of claim 33, wherein the oxygen scavenging compound is ethylene/vinyl cyclohexene copolymer (EVCH).

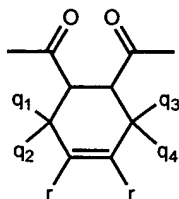
35. The packaging article of claim 32, wherein X is selected from:

$-\text{O}-(\text{CHR})_n-$ ;  $-(\text{C}=\text{O})-\text{O}-(\text{CHR})_n-$ ;  $-\text{NH}-(\text{CHR})_n-$ ;  $-\text{O}-(\text{C}=\text{O})-(\text{CHR})_n-$ ;  
10  $-(\text{C}=\text{O})-\text{NH}-(\text{CHR})_n-$ ; or  $-(\text{C}=\text{O})-\text{O}-\text{CHOH}-\text{CH}_2-\text{O}-$ .

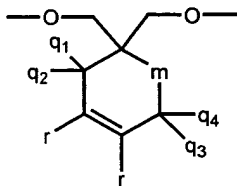
36. The packaging article of claim 35, wherein the oxygen scavenging polymer is a homopolymer or a copolymer of cyclohexenylmethyl acrylate.

37. The packaging article of claim 36, wherein the oxygen scavenging polymer is ethylene/methyl acrylate/cyclohexenylmethyl acrylate terpolymer (EMCM), ethylene/cyclohexenylmethyl acrylate copolymer (ECHA), or cyclohexenylmethyl acrylate homopolymer (CHAA).

38. The packaging article of claim 28, wherein the oxygen scavenging polymer is a polyester having structure II or structure III:



(II)



(III)

wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are independently selected from hydrogen, methyl, or ethyl;  $m$  is  $-(CH_2)_n-$ , wherein  $n$  is an integer from 0 to 4, inclusive; and, when  $r$  is hydrogen, at least one of  $q_1$ ,  $q_2$ ,  $q_3$ , and  $q_4$  is also hydrogen.

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39. The composition of claim 38, wherein in structure II  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are hydrogen.

40. The composition of claim 38, wherein in structure III  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are hydrogen and  $n$  is 1.

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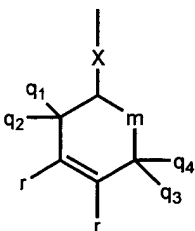
41. The packaging article of claim 28, wherein the oxygen barrier layer further comprises a compatibilizer.

42. The packaging article of claim 41, wherein the compatibilizer is selected from anhydride-modified or acid-modified poly(ethylene acrylate), poly(ethylene vinyl acetate), or polyethylene.

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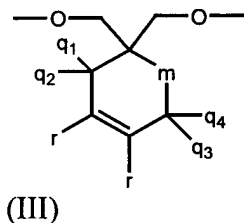
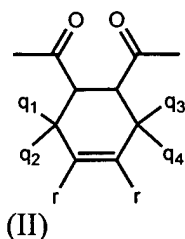
43. The packaging article of claim 41, wherein the compatibilizer comprises a block copolymer of (i) EVOH, PVDC, PET, polyethylene naphthalate, or polyamide other than MXD6 and (ii) a polyolefin comprising a cycloalkenyl pendant group having the structure I, or a polyester having structure II or structure III:

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(I)





5                wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are independently selected from hydrogen, methyl, or ethyl;  $m$  is  $-(CH_2)_n-$ , wherein  $n$  is an integer from 0 to 4, inclusive;  $X$  is null or a linking group; and, when  $r$  is hydrogen, at least one of  $q_1$ ,  $q_2$ ,  $q_3$ , and  $q_4$  is also hydrogen.

10            44.        The packaging article of claim 43, wherein the compatibilizer comprises a block copolymer of EVOH, PET, PVDC, polyethylene naphthalate, or polyamide other than MXD6 with EMCM, ECHA, EVCH, or CHAA.

15            45.        The packaging article of claim 28, wherein the oxygen scavenging polymer is present in the oxygen barrier layer as an insoluble filler.

              46.        The packaging article of claim 28, further comprising a transition metal salt in the oxygen barrier layer or a layer adjacent to the oxygen barrier layer.

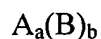
20            47.        The packaging article of claim 46, wherein the transition metal is selected from cobalt, copper, nickel, iron, manganese, rhodium, or ruthenium.

              48.        The packaging article of claim 47, wherein the transition metal salt comprises a counterion selected from  $C_1$ - $C_{20}$  alkanoates.

49. The packaging article of claim 48, wherein the transition metal salt is cobalt oleate, cobalt stearate, or cobalt neodecanoate.

50. The packaging article of claim 28, further comprising a photoinitiator in the oxygen barrier layer.

51. The packaging article of claim 50, wherein the photoinitiator is selected from benzophenone derivatives containing at least two benzophenone moieties and having the formula:



wherein

A is a bridging group selected from sulfur; oxygen; carbonyl;  $-\text{SiR}''^2-$ , wherein each  $\text{R}''$  is individually selected from alkyl groups containing from 1 to 12 carbon atoms, aryl groups containing 6 to 12 carbon atoms, or alkoxy groups containing from 1 to 12 carbon atoms;  $-\text{NR}'''-$ , wherein  $\text{R}'''$  is an alkyl group containing 1 to 12 carbon atoms, an aryl group containing 6 to 12 carbon atoms, or hydrogen; or an organic group containing from 1 to 50 carbon atoms;

a is an integer from 0 to 11;

B is a substituted or unsubstituted benzophenone group; and

b is an integer from 2 to 12.

52. The packaging article of claim 51, wherein the photoinitiator is selected from dibenzoyl biphenyl, substituted dibenzoyl biphenyl, benzoylated terphenyl, substituted benzoylated terphenyl, tribenzoyl triphenylbenzene, substituted tribenzoyl triphenylbenzene, benzoylated styrene oligomer, or substituted benzoylated styrene oligomer.

53. The packaging article of claim 28, further comprising an antioxidant in the oxygen barrier layer.

54. The packaging article of claim 53, wherein the antioxidant is selected from 2,6-di(t-butyl)-4-methylphenol(BHT), 2,2'-methylene-bis(6-t-butyl-p-cresol), triphenylphosphite, tris-(nonylphenyl)phosphite, vitamin E, tetra-bismethylene 3-(3,5-ditertbutyl-4-hydroxyphenyl)-propionate methane, or dilaurylthiodipropionate.

55. The packaging article of claim 28, further comprising a second oxygen barrier layer, wherein the second oxygen barrier layer does not comprise an oxygen scavenging polymer.

56. The packaging article of claim 55, wherein the second oxygen barrier layer comprises an oxygen barrier polymer selected from polymers or copolymers of vinyl alcohol, polyesters, polymers or copolymers of vinylidene dichloride, polymers or copolymers of epoxies, polysulfones, polymers or copolymers of acrylonitrile, polymers or copolymers of isocyanates, or polyamides other than MXD6.

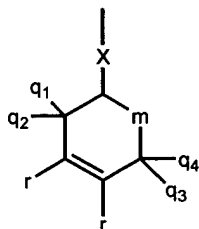
57. The packaging article of claim 28, further comprising a structural layer.

58. The packaging article of claim 57, wherein the structural layer comprises PET, polyamide, polypropylene, polyethylene, low density polyethylene, very low density polyethylene, ultra-low density polyethylene, high density polyethylene, polyvinyl chloride, ethylene-vinyl acetate, ethylene-alkyl (meth)acrylates, ethylene-(meth)acrylic acid, ethylene-(meth)acrylic acid ionomers, paperboard, or cardboard.

59. The packaging article of claim 28, further comprising an oxygen scavenging layer.

60. The packaging article of claim 59, wherein the oxygen scavenging layer comprises an oxygen scavenging polymer comprising an ethylenic backbone and at least one cyclic olefinic pendant group.

- 5 61. The packaging article of claim 60, wherein the cyclic olefinic pendant group is a cycloalkenyl group having structure I:



(I)

- 10 wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are independently selected from hydrogen, methyl, or ethyl;  $m$  is  $-(CH_2)_n-$ , wherein  $n$  is an integer from 0 to 4, inclusive;  $X$  is null or a linking group; and, when  $r$  is hydrogen, at least one of  $q_1$ ,  $q_2$ ,  $q_3$ , and  $q_4$  is also hydrogen.

62. The packaging article of claim 61, wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ ,  $r$ , are each hydrogen and  $n$  is 1.

- 15 63. The packaging article of claim 62, wherein the oxygen scavenging compound is ethylene/vinyl cyclohexene copolymer (EVCH).

64. The packaging article of claim 61, wherein  $X$  is selected from:

- 20  $-O-(CHR)_n-$ ;  $-(C=O)-O-(CHR)_n-$ ;  $-NH-(CHR)_n-$ ;  $-O-(C=O)-(CHR)_n-$ ;  
 $-(C=O)-NH-(CHR)_n-$ ; or  $-(C=O)-O-CHOH-CH_2-O-$ .

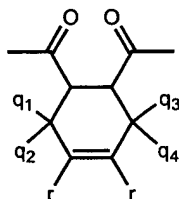
65. The packaging article of claim 64, wherein the oxygen scavenging polymer is a homopolymer or a copolymer of cyclohexenylmethyl acrylate.

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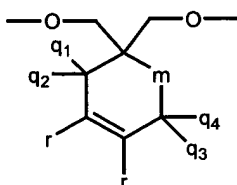
66. The packaging article of claim 65, wherein the oxygen scavenging polymer is ethylene/methyl acrylate/cyclohexenylmethyl acrylate terpolymer (EMCM),

ethylene/cyclohexenylmethyl acrylate copolymer (ECHA), or cyclohexenylmethyl acrylate homopolymer (CHAA).

67. The packaging article of claim 60, wherein the oxygen scavenging polymer is a polyester comprising structure II or structure III:



(II)



(III)

- wherein q<sub>1</sub>, q<sub>2</sub>, q<sub>3</sub>, q<sub>4</sub>, and r are independently selected from hydrogen, methyl, or ethyl; m is -(CH<sub>2</sub>)<sub>n</sub>-, wherein n is an integer from 0 to 4, inclusive; and, when r is hydrogen, at least one of q<sub>1</sub>, q<sub>2</sub>, q<sub>3</sub>, and q<sub>4</sub> is also hydrogen.

68. The composition of claim 67, wherein in structure II q<sub>1</sub>, q<sub>2</sub>, q<sub>3</sub>, q<sub>4</sub>, and r are hydrogen.

69. The composition of claim 67, wherein in structure III q<sub>1</sub>, q<sub>2</sub>, q<sub>3</sub>, q<sub>4</sub>, and r are hydrogen and n is 1.

70. The packaging article of claim 60, wherein the oxygen scavenging layer is a liner, coating, sealant, gasket, adhesive, non-adhesive insert, or fibrous mat insert in the packaging article.

71. The packaging article of claim 28, wherein the packaging article is in the form of a single layer flexible article, a multilayer flexible article, a single layer rigid article, or a multilayer rigid article.

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72. A method of making an active oxygen barrier composition comprising an oxygen barrier polymer and an oxygen scavenging polymer, comprising:  
providing the oxygen barrier polymer and the oxygen scavenging polymer; and  
blending the oxygen barrier polymer and the oxygen scavenging polymer to form  
the oxygen barrier composition.

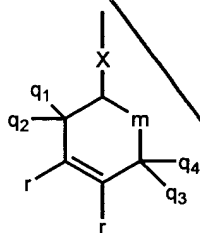
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73. The method of claim 72, wherein the oxygen barrier polymer is selected from polymers or copolymers of vinyl alcohol, polyesters, polymers or copolymers of vinylidene dichloride, polymers or copolymers of epoxies, polysulfones, polymers or copolymers of acrylonitrile, polymers or copolymers of isocyanates, or polyamides other than MXD6.

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74. The method of claim 72, wherein the oxygen scavenging polymer comprises an ethylenic backbone and at least one cyclic olefinic pendant group.

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75. The method of claim 74, wherein the cyclic olefinic pendant group is a cycloalkenyl group having structure I:



(I)

wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are independently selected from hydrogen, methyl, or ethyl;  $m$  is  $-(CH_2)_n-$ , wherein  $n$  is an integer from 0 to 4, inclusive;  $X$  is null or a linking group; and, when  $r$  is hydrogen, at least one of  $q_1$ ,  $q_2$ ,  $q_3$ , and  $q_4$  is also hydrogen.

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76. The method of claim 75, wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ ,  $r$ , are each hydrogen and  $n$  is 1.

77. The method of claim 76, wherein the oxygen scavenging compound is ethylene/vinyl cyclohexene copolymer (EVCH).

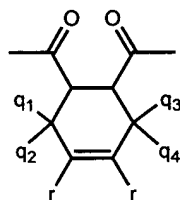
5 78. The method of claim 75, wherein X is selected from:

$-O-(CHR)_n-$ ;  $-(C=O)-O-(CHR)_n-$ ;  $-NH-(CHR)_n-$ ;  $-O-(C=O)-(CHR)_n-$ ;  
 $-(C=O)-NH-(CHR)_n-$ ; or  $-(C=O)-O-CHOH-CH_2-O-$ .

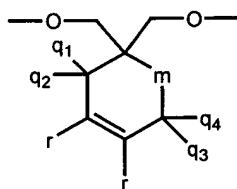
10 79. The method of claim 78, wherein the oxygen scavenging polymer is a homopolymer or a copolymer of cyclohexenylmethyl acrylate.

80. The method of claim 79, wherein the oxygen scavenging polymer is ethylene/methyl acrylate/cyclohexenylmethyl acrylate terpolymer (EMCM),  
15 ethylene/cyclohexenylmethyl acrylate copolymer (ECHA), or cyclohexenylmethyl acrylate homopolymer (CHAA).

81. The method of claim 72, wherein the oxygen scavenging polymer is a polyester comprising structure II or structure III:



20 (II)



(III)

wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are independently selected from hydrogen, methyl, or ethyl;  $m$  is  $-\text{CH}_2)_n-$ , wherein  $n$  is an integer from 0 to 4, inclusive; and, when  $r$  is hydrogen, at least one of  $q_1$ ,  $q_2$ ,  $q_3$ , and  $q_4$  is also hydrogen.

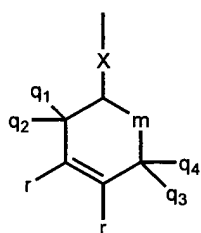
5 82. The method of claim 81, wherein in structure II  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are hydrogen.

83. The composition of claim 81, wherein in structure III  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are hydrogen and  $n$  is 1.

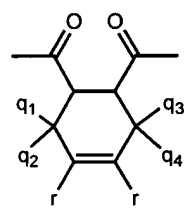
10 84. The method of claim 72, wherein the blending step further comprises blending a compatibilizer with the oxygen barrier polymer and the oxygen scavenging polymer.

15 85. The method of claim 84, wherein the compatibilizer is selected from anhydride-modified or acid-modified poly(ethylene acrylate), poly(ethylene vinyl acetate), or polyethylene.

20 86. The method of claim 84, wherein the compatibilizer comprises a block copolymer of (i) EVOH, PVDC, PET, polyethylene naphthalate, or polyamide other than MXD6 and (ii) a polyolefin comprising a cycloalkenyl pendant group having structure I, or a polyester having structure II or structure III:

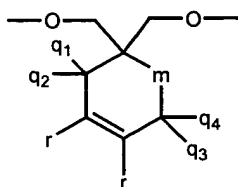


(I)



(II)





(III)

wherein q<sub>1</sub>, q<sub>2</sub>, q<sub>3</sub>, q<sub>4</sub>, and r are independently selected from hydrogen, methyl, or ethyl; m is -(CH<sub>2</sub>)<sub>n</sub>-, wherein n is an integer from 0 to 4, inclusive; X is null or a linking group; and, when r is hydrogen, at least one of q<sub>1</sub>, q<sub>2</sub>, q<sub>3</sub>, and q<sub>4</sub> is also hydrogen.

87. The method of claim 86, wherein the compatibilizer is a block copolymer of EVOH, PET, PVDC, polyethylene naphthalate, or polyamide other than MXD6 with EMCM, ECHA, EVCH, or CHAA.

88. The method of claim 72, wherein the blending occurs during a reactive extrusion.

89. A method of making an active oxygen barrier composition comprising an oxygen barrier polymer and an oxygen scavenging polymer, wherein the oxygen scavenging polymer is present as an insoluble filler, comprising:

providing the oxygen barrier polymer and the oxygen scavenging polymer;  
cross-linking the oxygen scavenging polymer with itself, to form an insoluble oxygen scavenging polymer; and

mixing the oxygen barrier polymer and the insoluble oxygen scavenging polymer, to form the oxygen barrier composition.

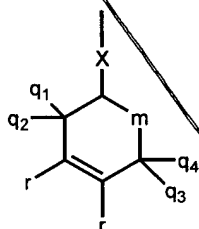
90. A method of forming an active oxygen barrier layer in a packaging article, comprising:

providing an oxygen barrier composition comprising an oxygen barrier polymer and an oxygen scavenging polymer; and  
forming the composition into the packaging article or an active oxygen barrier layer thereof.

91. The method of claim 90, wherein the oxygen barrier polymer is selected from polymers or copolymers of vinyl alcohol, polyesters, polymers or copolymers of vinylidene dichloride, polymers or copolymers of epoxies, polysulfones, polymers or copolymers of acrylonitrile, polymers or copolymers of isocyanates, or polyamides other than MXD6.

92. The method of claim 90, wherein the oxygen scavenging polymer comprises an ethylenic backbone and at least one cyclic olefinic pendant group.

93. The method of claim 92, wherein the cyclic olefinic pendant group is a cycloalkenyl group having the structure I:



(I)

wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are independently selected from hydrogen, methyl, or ethyl;  $m$  is  $-(CH_2)_n-$ , wherein  $n$  is an integer from 0 to 4, inclusive;  $X$  is null or a linking group; and, when  $r$  is hydrogen, at least one of  $q_1$ ,  $q_2$ ,  $q_3$ , and  $q_4$  is also hydrogen.

94. The method of claim 93, wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ ,  $r$ , are each hydrogen and  $n$  is 1.

95. The method of claim 94, wherein the oxygen scavenging compound is ethylene/vinyl cyclohexene copolymer (EVCH).

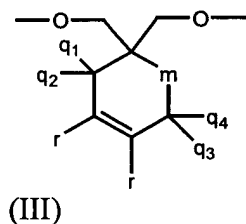
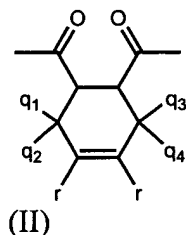
96. The method of claim 93, wherein  $X$  is selected from:

$-O-(CHR)_n-$ ;  $-(C=O)-O-(CHR)_n-$ ;  $-NH-(CHR)_n-$ ;  $-O-(C=O)-(CHR)_n-$ ;  
 $-(C=O)-NH-(CHR)_n-$ ; or  $-(C=O)-O-CHOH-CH_2-O-$ .

97. The method of claim 96, wherein the oxygen scavenging polymer is a homopolymer or a copolymer of cyclohexenylmethyl acrylate.

98. The method of claim 97, wherein the oxygen scavenging polymer is ethylene/methyl acrylate/cyclohexenylmethyl acrylate terpolymer (EMCM), ethylene/cyclohexenylmethyl acrylate copolymer (ECHA), or cyclohexenylmethyl acrylate homopolymer (CHAA).

99. The method of claim 90, wherein the oxygen scavenging polymer is a polyester structure II or structure III:



wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are independently selected from hydrogen, methyl, or ethyl;  $m$  is  $-(CH_2)_n-$ , wherein  $n$  is an integer from 0 to 4, inclusive; and, when  $r$  is hydrogen, at least one of  $q_1$ ,  $q_2$ ,  $q_3$ , and  $q_4$  is also hydrogen.

100. The method of claim 99, wherein in structure II  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are hydrogen.

101. The method of claim 99, wherein in structure III  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are hydrogen and  $n$  is 1.

102. The method of claim 90, wherein the forming step comprises forming a transition metal salt into the active oxygen barrier layer or a layer adjacent to the active oxygen barrier layer of the packaging article.

5 103. The method of claim 90, wherein the active oxygen barrier layer further comprises a photoinitiator.

104. The method of claim 90, wherein the active oxygen barrier layer further comprises an antioxidant.

10

105. The method of claim 90, wherein the forming step further comprises forming a second oxygen barrier layer in the packaging article, wherein the second oxygen barrier layer does not comprise an oxygen scavenging polymer.

15

106. The method of claim 90, wherein the forming step further comprises forming a structural layer in the packaging article.

107. The method of claim 90, wherein the forming step further comprises forming an oxygen scavenging layer in the packaging article.

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108. The method of claim 90, wherein the forming step further comprises forming the packaging article as a single layer flexible article, a multilayer flexible article, a single layer rigid article, or a multilayer rigid article.

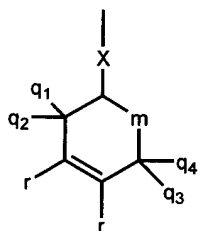
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109. The method of claim 90, wherein the active oxygen barrier layer further comprises a compatibilizer.

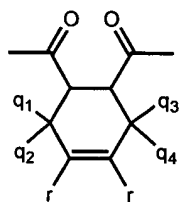
110. The method of claim 109, wherein the compatibilizer is selected from anhydride-modified or acid-modified poly(ethylene acrylate), poly(ethylene vinyl acetate), or polyethylene.

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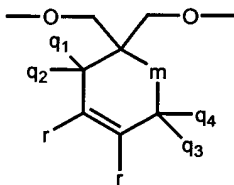
111. The method of claim 109, wherein the compatibilizer comprises a block copolymer of (i) EVOH, PET, polyethylene naphthalate, or polyamide other than MXD6 and (ii) a polyolefin comprising a cycloalkenyl pendant group having structure I, or a polyester having structure II or structure III:



5 (I)



(II)



(III)

10 wherein  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$ , and  $r$  are independently selected from hydrogen, methyl, or ethyl;  $m$  is  $-(CH_2)_n-$ , wherein  $n$  is an integer from 0 to 4, inclusive;  $X$  is null or a linking group; and, when  $r$  is hydrogen, at least one of  $q_1$ ,  $q_2$ ,  $q_3$ , and  $q_4$  is also hydrogen.

12. The method of claim 111, wherein the compatibilizer is a block or grafted  
15 copolymer of EVOH, PET, polyethylene naphthalate, or polyamide other than MXD6 with EMCM, EVCH, or CHAA.

113. The method of claim 109, wherein the compatibilizer is formed by reactive extrusion of monomers.

114. The method of claim 111, wherein the compatibilizer is formed by adding monomers comprising the ethylenic backbone and the cycloalkenyl group to a polymer of EVOH, PET, PVDC, polyethylene naphthalate, or polyamide other than MXD6.

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115. The method of claim 90, wherein the oxygen scavenging polymer is present in the oxygen barrier composition as an insoluble filler.

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